Our large series shows every possible variation in the development of these characters, from young specimens in which no scar or tails (for they look very much like squirrel tails) are visible, to old, solid shells with a heavy, snowy, swollen callus, and having these brown wings very strongly developed.

The same characters are seen in *Patella* (*Helcioniscus*) *argentata* Sowb., better known as *P. talcosa* Gld. *H. clypeater*, which Mr. Pilsbry places with *Nacella*, on account of slight differences in anatomical characters, but which, conchologically, seems closely allied to *P. argentata*, and in other species.

In short, there can be no doubt that this scar and the curious radiating brown lines are merely adult characters which are developed in quite a number of species. I quite agree with Mr. Geo. W. Taylor in believing that this species does not come from the west coast of South America, but is probably confined to the north-western part of the Indo-Pacific region.

THE VIRGINIA COLONY OF HELIX NEMORALIS.

BY T. D. A. COCKERELL, N. M. AGR. EXP. STA.

There appeared in the NAUTILUS, of Nov., 1889, a paper under the above title, setting forth some very interesting facts regarding the variations exhibited by a colony of *H. nemoralis* at Lexington, Va. Prof. J. H. Morrison, who collected the shells studied, took considerable interest in the matter at that time, and had gathered together a good deal of information additional to that given in the above-cited paper. I have, therefore, been quite disappointed not to see any publication by him on this subject, or any evidence that the colony has received further attention.

It is scarcely necessary to dwell on the extreme interest attaching to the history of this colony. Here we have a variable species introduced into a new country, and varying in a most extraordinary manner under the influence of the new environment. The peculiar variations are very numerous, though, in the main, tending entirely in one direction—to the splitting of the normal bands. Although the number of individuals thus varying is considerable, very few of such have exactly the same formula, whereas, several of the old European variations occur in numerous specimens.

It appears, in the highest degree, probable that these peculiar variations are congenital and not acquired during the lifetime of

the individual,[1] in which case we have an example of environment modifying the germ-plasm—the odds against the variation being only accidentally coincident with the changed environment being enormous.

In 1889, the above-mentioned changes had taken place in the colony, but time was needed to show whether they would increase in number and degree; or whether, as seemed more probable, the old European varieties would eventually assert themselves, and swamp the rest. In either case, the result would be very interesting, and now that five years have elapsed, it is extremely desirable that some one should make a new investigation and report in detail. It is really astonishing that no one has yet done so. The colony was, in 1889, so evidently in a condition of unstable equilibrium, that it seems certain that changes must have occurred in the interval, tending to the predominance either of the old or the new (split-band) type.

Believing that Prof. Morrison would publish, I did not follow my paper of 1889 with further observations, but it will be as well now to put the following on record:

(1) Lexington, Va., received from Morrison one of each of the following, Oct. 26, 1889:

Helix nemoralis mut. *guettardia* Moq.
Helix nemoralis mut. *arcelinia* Loc.
Helix nemoralis mut. *petiveria* 10345 = *requienia* Moq.
Helix nemoralis mut. *libellula* 1(234)5 Kregl.
Helix nemoralis mut. *libellula* $123(_{4}4)5$ nov.
Helix nemoralis mut. *libellula* 0030_{5} Ckll. (juv.).
Helix nemoralis mut. *libellula* $12_{3}45$ Ckll.
Helix nemoralis mut. *libellula* $1_{2}23_{x}(45)$ nov. (juv.).
Helix nemoralis mut. *libellula* $12_{3}3(45)$ nov. (juv.).
(Morrison had another example.)
Helix nemoralis mut. *libellula* $12_{3}3(_{44}4)5$ nov.
(Morrison had another example.)
Helix nemoralis mut. *libellula* $_{1}0_{3}45$ nov. (juv.).
Helix nemoralis mut. *libellula* $12_{x}3_{x}45$ nov. (juv.).
Helix nemoralis mut. *libellula* $_{1}234(5_{5})$ nov. (juv.).
Helix nemoralis mut. *libellula* $123_{3}45$ nov.
Helix nemoralis mut. *libellula* $12_{xx}3_{xx}45$ nov.
Helix nemoralis mut. *libellula* $003_{4}5$ Ckll.

[1] If so acquired, it must be in very early life, as, in many instances, the variations were recorded from immature examples.

Helix nemoralis mut. *libellula* $12_3(45)$ Ckll.

Mr. Morrison also sent me word of the occurrence of mut. *libellula* 0030_5 Ckll.

(2) Lexington, Va., received from Morrison in November, 1889.

H. nemoralis mut. *libellula bimarginata* 12_x345 nov.
(the bands tend to coalesce.)

H. nemoralis mut. *libellula* 12345 Moq.

H. nemoralis mut. *libellula bimarginata major* 00000 Moq.
(thin, max. diam. $28\frac{1}{2}$ mm.)

H. nemoralis mut. *libellula major* 12345 Moq.
(max. diam. $26\frac{3}{4}$ mm.)

H. nemoralis mut. *petiveria* (12345) = *richardia* Moq.

H. nemoralis mut. *petiveria umbilicata* 123_x45 Ckll.
(nov. mut. *umbilicata*, shell more globose, umbilicus open.)

H. nemoralis mut. *libellula* 1234445, nov. = *morrisonia* nov.
(extra bands 44, much thinner than 4.)

H. nemoralis mut. *albescens* 00000 Moq.
(pale yellow, like mut. *subalbida* of *hortensis*.)

(3) Lexington, Va., not seen, recorded by Morrison in litt., Nov. 16, 1889.

H. nemoralis mut. *libellula* (12)(345) Kregl. (one).

H. nemoralis mut. *libellula* 120(45) Kregl. (one).

H. nemoralis mut. *libellula* 1_2045 nov. Morr. (two).

H. nemoralis mut. *libellula* (123)45 = *nilssonia* Moq. (one).

H. nemoralis mut. *libellula* 1234455 nov. Morr. (one).

H. nemoralis mut. *rubella* 123(45) Moq. (four).

H. nemoralis mut. *rubella* 10345 Moq. (three).

H. nemoralis mut. *rubella* 123X45 Ckll. (one).

(4) Lexington, Va., not seen, recorded by Morrison in litt. Jan. 2, 1890. This is the most extraordinary series of all; about all the band-variations are new.

Mut. *petiveria* $12_{3xx}45$.

Mut. *petiveria* (12)3(45) Moq.

Mut. *libellula* $1_{23}45$.

Mut. *libellula* $12_x3_{xx}45$.

Mut. *libellula* $12(_33)_x(45)$.

Mut. *libellula* 123(45) *bimarginata*.

Mut. *libellula* 123_x45 Ckll.

Mut. *libellula* $123_{xx}45$.

Mut. *libellula* $123_{xx}(45)$.

Mut. *libellula* 1(22)045.

Mut. *libellula* 1234(55).

Mut. *libellula* 12(33)45.

Mut. *libellula* $1_23_x4_4(55)$.

Mut. *libellula* $12_23_34(55)$.

Mut. *libellula* 1(22)3(45).

Mut. *libellula* $123_4(4445)$.

Mut. *libellula* $1(2_2)345$.

Mut. *libellula* $(_112_23_{34}4_4555)$.

Mut. *libellula* 123_445.

Mut. *libellula roseolabiata bimarginata* 12345.
Mut. *libellula* $123(4_4)5$.
Mut. *libellula* $123(_{44}4)5$.
Mut. *libellula* 12_x345 Ckll., *bimarginata*.
Mut. *libellula* 12_x345 Ckll.
Mut. *libellula* $12_{33}(4445)$.
Mut. *libellula* $(_12_{xx}3_3)(45)$.
Mut. *libellula* 103(44)5.
Mut. *libellula* 123(44)5.
Mut. *libellula* 1234_45.
Mut. *libellula* 1(22)345.
Mut. *libellula* 1_x03_x45.
Mut. *libellula roseolabiata bimarginata* $(_12345)$.
Mut. *libellula* 1_23_45.
Mut. *libellula* $(12_{333}45)$.
Mut. *libellula* $(12_{233}45)$.

It should be explained that a split-band bracketed, as (44), means that it is split, but joins near the mouth of the shell.

NOTES AND NEWS.

Mr. T. Wayland Vaughan is now engaged in geological work on the scientific corps of the U. S. Geological Survey.

Mr. Gilbert D. Harris, formerly of the U. S. Geological Survey, has, after spending the summer abroad, taken up the work of his new appointment at Cornell University, where the valuable collection of mollusks, of which Dr. Newcomb was so long curator, is under his charge, as well as the Palæontological Department.

The Long Beach (California) Conchological Club elected the following officers for the next year: Miss I. M. Shepard, President; Mrs. M. Darling, Vice-President; Mrs. Terry, Treasurer and Secretary, with Miss E. Lowe her assistant.

The Club is to hold its meetings twice a month. The following are the charter members: Miss E. Lowe, Mrs. M. Darling, Mrs. E. Cushman, Mrs. R. Preston, Mrs. Terry, Mrs. Craig, Miss I. M. Shepard and Mrs. Dial. At the next meeting, to be held December 1, new members will be received. The Club has been studying and collecting for a year, but had not before formally organized.

They held their first Annual Meeting and Reception at the home of Miss E. Lowe, on the evening of October 6. A short program was given and letters of greeting read from Dr. W. H. Dall, Mr. H. Hemphill and Prof. Josiah Keep. Ice cream and cake were served in shells, and the rooms handsomely decorated with palms, shells, kelp, and smilax.

The Club would be glad to hear from any and all interested in the same study, and will make a special study and collection of our local shells or shells of Los Angeles Co.

Amnicola olivacea Pils.—In April, I visited the original lo-